CLAIMS

What is claimed is:

1. A product comprising:

a dimensionally stable polymeric multifilament yarn having a decitex per filament count DPF of at least 7.5 and a fatigue strength retention FR, wherein the yarn is spun and drawn such that when DPF increases at least 100% over a reference yarn, and FR increases at least 19% absolute over the reference yarn; and

wherein the reference yarn has a fatigue strength retention of 64% and a DPF of 3.7 with a twist multiplier of 19700.

2. The product of claim 1 wherein the multifilament yarn comprises a polyester.

3. The product of claim 1 wherein the polyester comprises poly(ethylene terephthalate).

4. The product of claim 3 wherein DPF is between 10 and 20.

5. The product of claim 4 wherein the yarn has a dimensional stability defined by E_x+TS of no more than 12.

6. The product of claim 4 wherein an adhesion active finish is applied to the yarn and the yarn has a dimensional stability defined by E_x+TS of no more than 11.

7. The product of claim 1 wherein the yarn is twisted or twisted in a cord and at least partially disposed within a rubber.

8. The product of claim 1 wherein the yarn is twisted or twisted in a cord, and the cord has a twist (single x cable TPM) of between 320 and 470 for an 1100 decitex yarn.

9. A method of forming a yarn comprising:

providing a polymeric material and spinning a plurality of filaments from the polymeric material; and

forming a dimensionally stable yarn from the plurality of filaments, wherein the yarn has a decitex per fiber count DPF of at least 7.5 and a fatigue strength retention FR; and

wherein the yarn is spun and drawn such that FR increases when DPF increases.

10. The method of claim 9 wherein the polymeric material comprises a polyester.

11. The method of claim 10 wherein the polyester is poly(ethylene terephthalate).

12. The method of claim 11 wherein DPF is between 10 and 20.

13. The method of claim 9 wherein the yarn has a dimensional stability defined by E_x+TS of no more than 12.

14. The method of claim 9 wherein the increase in fatigue strength retention per DPF is no less than 1%.

15. The method of claim 9 wherein an adhesion promoted finish is applied to the yarn and the yarn is twisted into a cord.

16. The method of claim 15 wherein the twisted yarn or cord is disposed within a rubber.

17. A product comprising a dimensionally stable polymeric multifilament yarn having a decitex per fiber count DPF of at least 7.5.

18. The product of claim 17 wherein the multifilament yarn comprises a polyester.

19. The product of claim 18 wherein the DPF is between 10 and 20.

20. The product of claim 17 wherein the yarn is twisted, or twisted in a cord, and at least partially disposed within a rubber, and wherein the cord has a twist (single x cable TPM) of 420 x 420 for an 1100 decitex yarn and a fatigue strength retention of at least 90% after 40000 cycles.

21. The product of claim 17 wherein the yarn is twisted, or twisted in a cord, and at least partially disposed within a rubber, and wherein the cord has a twist (single x cable TPM) of 470 x 470 for 1100 decitex yarn and a fatigue strength retention of at least 97% after 40000 cycles.

22. A product comprising:

a dimensionally stable polymeric multifilament yarn having a decitex per fiber count DPF of at least 7.5 and a fatigue strength retention FR, wherein the yarn is spun and drawn such that FR increases when DPF increases.

23. The product of claim 22 wherein the multifilament yarn comprises a polyester.

24. The product of claim 22 wherein DPF is between 10 and 20.

25. The product of claim 22 wherein the dimensionally stable polymeric multifilament yarn has a decitex per filament of at least 7.5 and a treated cord strength retention of at least 70% absolute after 40000 cycles for a twist multiplier of 18760.

26. The product of claim 22 wherein the dimensionally stable polymeric multifilament yarn has a decitex per filament of at least 7.5 and a treated cord strength retention of at least 85% after 40000 cycles absolute for a twist multiplier of 20636.

27. The product of claim 22 wherein the dimensionally stable polymeric multifilament yarn has a decitex per filament of at least 7.5 and a treated cord strength retention of at least 96% after 40000 cycles absolute for a twist multiplier of 22043.